228 Kadimu, and Karachonya are the best fishing grounds. Fewer fish are said to be caught during the full moon and the takes are greater when the nights are dark and rainy.

The boats put out 10 to 20 nets each, *i.e.*, 1,000 to 2,000 yards. During the building of the Elderet Railway one European who supplied fish to the labourers manipulated up to 8,000 yards of nets.

227 The 5 to 5½ inch mesh takes the Ngege, Mbiru, Mumi, Kamongo, Seu, Soma, and sometimes Sira. Occasionally a net of a 3 inch mesh
228 is used and this takes the Ningu, Sira, and Onega.

These nets run on a coir rope top and bottom. The top is supported by corks and the bottom weighted with iron rings. They only catch fish while drifting and any check through catching on an obstruction will render them useless. The nets are often damaged by floating islands, boats, and crocodiles.

FISHING CENTRES:

There are three Indian fishing villages in the Gulf, at Seme, Asembo, and Nanga. The last is only three miles south of Kisumu and is the only one near enough to supply fish for the Nairobi market.

MARKETING AND COST:

228 The fish for the Nairobi market are brought in by natives in sacks
935 on Sundays, Mondays, Tuesdays, and Thursdays. They are cleaned by Kavirondo women under a tree on the Lee shore near the station and are packed in ice and despatched to Nairobi by the 2-25 p.m. train. The Kavirondo women obtain the entrails as their perquisites and the Indian who superintends takes the gills which appear to be regarded as a delicacy and are extracted before the fish are packed. The fish are packed in ice in large chests. The ice costs 18 cents a pound and one pound is required for each fish. The freight to Nairobi is Shs 3/50 per 100 lbs. Together with the other incidental expenses it costs about 25 cents to send a fish to Nairobi. When the fish are plentiful the usual price is 25 cents a fish in Kisumu market.

ADVERSE TIMES FOR FISHING.

228 The months April to August are not good fishing months and during these months the natives entirely give up fishing in the Lake with drag nets and confine themselves almost entirely to catching fish in the river weirs (Kek).

SPAWNING:

136 Most of the Lake fish spawn in May, June and July. Carp (Ngege and Mbiru) are plentiful during the other nine months. The carp (Kavirondo Ngege) spawn in shallow water with sandy bottom at a depth of 3 to 5 ft., and are thus immune from capture by nets which cannot be used in such shallow spots. They do not spawn in the Gulf except in rare cases but choose the spawning

136 beds near the Islands where the bottom is sandy. The female scoops out a circular hole and deposits the eggs and the male then fertilises them and takes charge hanging over the nest and keeping away sediment by the action of the fins and tail till the young hatch out. This fanning motion keeps fresh water passing over the eggs.

It seems probable that the fish come up the Gulf to spawn and are then caught. A continuance of this year after year may be exterminating the Gulf fish. There is not any close season under the Ordinance. It is possible that the natives catch fry near to the shore under the impression that they are full-grown fish of a small type.

It will be noted that there is a certain amount of divergence of opinion as to where the fish spawn. My authority for stating that they do not spawn in the Gulf is Mr. Oorloff, ex-Government Assistant Surgeon, who is a local authority on Lake Victoria fish.

DECLINE OF INDUSTRY: DIMINISHING CATCHES.

228 433 There appears to be no doubt whatever that fish taken in the Lake are decreasing and various reasons have been brought forward to account for this. Mr. Acton, Superintendent of Inland Revenue and Conservancy, dealt with this in his annual report report for 1923 and the figures he gave are of interest and worth quoting:

Year.	Sum collected for licences.	Average retail price of fish.
	Shs.	Cents.
1917-18	16,850 ...	60
1918-19	14,530 ...	70 to Shs. 1/-
1919-20	19,850 ...	50 to 75
1920-21	19,200 ...	50
1921 (9 months) ...	16,800 ...	40 to 25
1922	9,900 ...	25
1923	8,120 ...	25

The following are the corresponding figures for the subsequent years:

1924	8,700
1925	10,500
1926	8,250
1927 to 31/5/27 ...	5,700

He states as follows: " During 1923 the fishermen appeared to have great difficulty in paying the annual licence of Shs. 300/- and although given a good deal of time in which to pay most of them had to be summoned to force payment.

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South Kavirondo.

Karachonya	...	...	...	21,105
Kochia	...	...	...	7,827
Kaniaća	...	...	...	9,579
Kasigunga	...	...	...	2,442
Kakzingiri	...	...	...	1,463
Gwasi	...	...	...	5,390
Karungu	...	...	...	2,569
Kadem	...	...	...	11,145
Moburu	...	...	...	771
Rusinga (Island)	...	...	...	2,099
Mfwangano (Island)	...	...	...	1,792
				65,682

Brief Account of Visit to Kach Bay.

226 The following short account of a trip round Kach Bay and up the Miriu river may be of interest as showing different methods of fishing followed by the Lake shore Jaluo. I had arranged with the son of Chief Amimo of Kanu to go and see the fish being taken out of the basket traps at the weirs at the mouth of the Kibos river and at 6-30 a.m. on May the 29th started off from the Dhow Pier with B. in the Government Motor Boat. It took us about one hour to get to the mouth of the river and on the way we saw the fishing fleet coming back with the night's catch to Nanga fishing station. We ran the motor boat a few yards up the river mouth and landed and the boy lit a fire and prepared breakfast. While waiting we watched the various fish-eating birds which were very numerous. The ordinary 136 Darter Anhinja rufa (Dholuo, Osoo) was there in large numbers. This bird goes right down under the water after the fish. It is said to capture the Fulu, Adel, and Osoga. An occasional cormorant (Dholuo, Kwasi) was to be seen and one or two storks (Dholuo, Okol) while numerous birds like seagulls and terns (Dholuo, Sialo) were flying about and occasionally dipping down into the water to capture a small fish.

The most remarkable birds however were the pelicans, *Pelecanus onocrotalus* (Dholuo, Mbuzi) which were floating quietly about and occasionally dipping their enormous beaks into the water and then raising them skyward to allow the unfortunate victim to slip down their throat more easily. Large numbers of kingfishers, *Ceryle rudis* and *Corythornis cristatus* (Dholuo, Kalamendi) were also seen. The empty shells of numerous fresh water snails (Dholuo, Ogongolo) strewed the shore, which was very sandy. While we were waiting a native brought up a small fish trap (Dholuo, Musathi) which he had just taken out of a ditch running into the Lake. This contained five

small fish: two Adel about four inches long, two Sire and one Ningu. We were also shown two small eels (Akunga). When breakfast was finished we walked up to see the big weir across the river. It was about 50 yards from the mouth and stretched from bank to bank in a zig-zag line. It was made of rough poles driven into the sandy bottom of the river which was very sluggish at this point. Numerous gaps had been left in the barrier and above every gap facing down stream was fastened a fish trap (Musathi) of which there were about 30 or 40 in all. By this time numerous natives had collected together and several rafts had been brought down to assist in lifting up the traps. These rafts were of several kinds. One kind consisted of long thin poles of very light ambatch (Dholuo, Mburi) wood fastened together. This wood, when dry, is as light as cork and is used for floats for the Mugondo, or stationary lines, and also by the Mohuru natives for floating their hippopotami harpoons. The second raft was a large square frame about 12 ft. by 5 ft. made of poles fastened together three deep by iron rods. The floor appeared to be made of some sort of matting. This raft, as it appeared to be the safest, we chose to stand on while watching the fish traps being taken up. The raft was tied up to the top side of the weir while two natives went into the water which was up to their shoulders and unfastened the traps one by one. When they were undone the native who was with us on the raft pulled the trap out of the water with the mouth up and the fish that were inside slipped to the end of the cone. When he got it on the raft he turned it the other way up and the fish could then be pulled out where the inner basket was fastened to the outer one at the mouth. The fish were then put into a receptacle of matting work for safe keeping called Ngaha. We watched 20 of these baskets being taken out and the following is a record of the catch in each basket. I was informed that these catches were very very small compared with what is usually taken in the months when fish are plentiful.

136 ● 226 226 501 226

It is noteworthy that only one of the 20 baskets drew a complete blank and in one other both the fish Ngege were dead.

1st trap	1 Mumi	11th trap	5 Ngege
2nd ,, ...	2 Ngege	12th ,, ...	1 Ngege
3rd ,, ...	1 Ngege	13th ,, ...	9 Ngege
4th ,, ...	1 Ngege	14th ,, ...	3 Ngege
5th ,, ...	1 Ngege	15th ,, ...	1 Ngege
6th ,, ...	1 Mbiru	16th ,, ...	3 Ngege
	1 Ningu	17th ,, ...	Empty
7th ,, ...	1 Ngege	18th ,, ...	2 Ngege
8th ,, ...	1 Sire		1 Mbiru
	3 Ngege	19th ,, ...	1 Ngege
9th ,, ...	1 Ngege	20th ,, ...	1 Ngege
10th ,, ...	2 Ngege		

226 trying to work their way into these channels get caught in the traps. On leaving the end of Kach Bay we made for the mouth of the Miriu river. On the way we were much interested in the performances of
136 a kingfisher (*Ceryle rudis*) which flew for some time parallel to the boat and a considerable height above the water. At intervals it would spot a fish, poise itself for a second or two, then drop like a stone perpendicularly into the Lake beak first with a splash, to rise again almost immediately and continue its flight. The Miriu is known
133 higher up as the Kipsonoi and Sondo, but is called the Miriu when it passes through the gorge in the escarpment and comes out into the Lake plain. From there it runs through the level country at first between high solid banks, but as it nears the Lake these disappear and are succeeded by dense papyrus swamps. The channel is exceedingly tortuous, in some cases nearly doubling back on itself, and the total distance from the gorge to the Lake is about seven miles. We took the boat about five or six miles up till we grounded on a sandy spot
136 after which we returned down stream. Several crocodiles (Dholuo, Nuang) were sighted on the way up and one varanus (Kalaguena) which is said to eat fish. When we started to float down with the engine running very quietly, we saw more crocodiles lying out on the mud banks, especially on the higher reaches of the river.

These reptiles must destroy vast quantities of fish and as very few of them are shot they are presumably increasing. It took about an hour to get back to the mouth of the river and two hours from there to Kisumu. I saw no otters (Dholuo, Mandoholo) on this trip. Some years ago I saw two swimming in the Miriu river.

The following are the names of the various fish found in the Lake, with a brief description of each of those I have seen. The list has no claim to be exhaustive.

(1) Sowa. A big fish with a nose and mouth like a trunk. Inhabits the Lake. It is not very popular as food. It is
[783] rarely taken in nets or on hooks. A few are taken in traps. Scales very small. Has firm flesh. The natives think that they get rich from eating it. —*Mormyrus sp.*

(2) Nyasa. A carp-like fish. Firm flesh which lasts well. This is the principal food fish of the Kavirondo Gulf and is sent to Nairobi in considerable quantities. It is extremely like the Mbiru. —*Tilapia sp.*

(3) Mbasa. A good eating fish and very difficult to distinguish from the Ngege. The only difference appears to be that it is a bit darker and the tops of the spine are reddish. It does not keep fresh so long. A small variety of this fish, possibly its fry, is called Obodi. —*Tilapia variabilis.*

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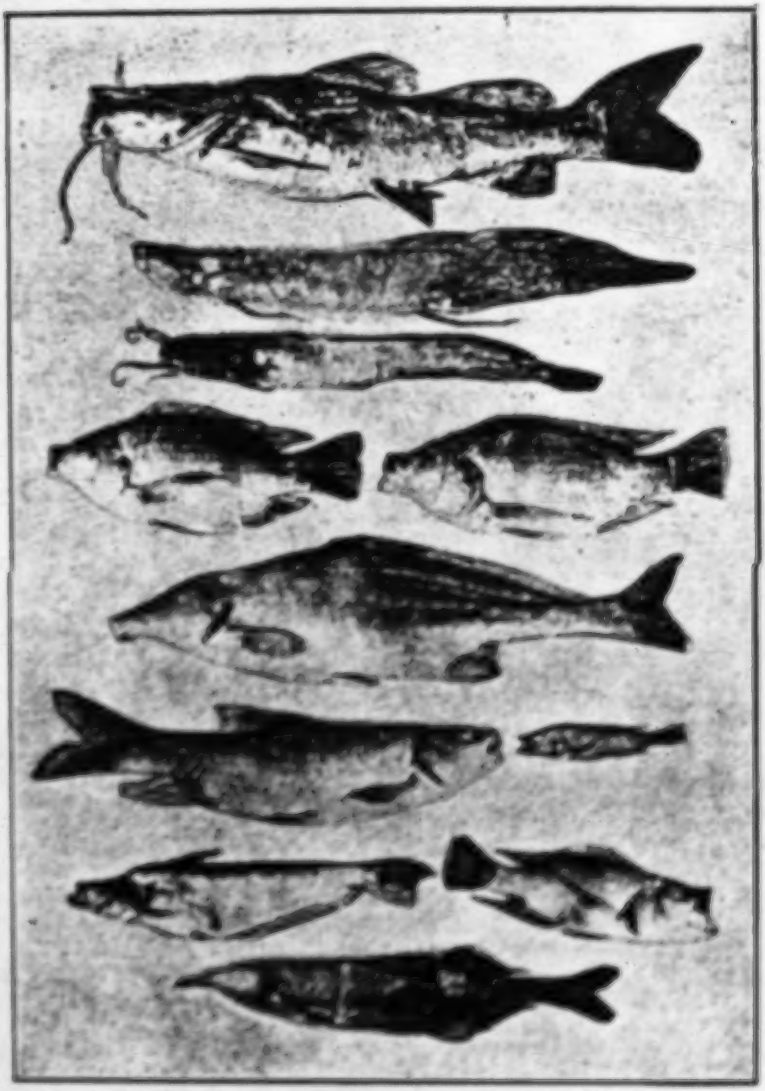

Photo by C. W. Dobbs.

FISH FROM KAVIRONDO GULF.

1. Seo (*Bagrus docmac*).
2. Kamongo (*Protopterus athiopicus*).
3. Mumi (*Clarias mossambicus*).
4. Ngege (*Tilapia sp.*). 5. Mbira (*Tilapia variabilis*).
6. Sama (*Mormyrus sp.*).
7. Fwasi (*Barbus radcliffi*). 8. Fulu (*Haplochromis sp.*).
9. Rua (*Labeo sp.*). 10. Gumdogoro (*Haplochromis sp.*).
11. Ongliwori (*Gnathonemus longibarbis*).

[Facing p. 107]

136 (4) KAMONGO (Swahili, Mamba). This is the Lung fish *Protopterus æthiopicus*. It is a mud fish and can live out of water in mud for months. The natives are fond of this fish. It breeds in papyrus swamp. When caught it utters a grunting sound. It is not eaten by Mohammedans. Lives in Lake and rivers.

(5) FULO. A small fish. Lives in Lake and rivers.
—*Haplochromis sp.?*

(6) SEU. A spined barbel. Has a big mouth with whiskers. Eats other fish. Grows very large. Takes meat or fish bait. Not very popular as food. Caught in the Lake. Not a very important fish. Only a few caught. —*Bagrus docmac.*

(7) FWANI. A yellow fish with big scales found often in rivers. Known as the Kisinja. This is the fish caught at the Jinja Falls. A true Barbus. Inhabits the Lake and large rivers. Very bony and poor food. —*Barbus Radcliffi.*

(8) ONDHUMI. Found in Lake and rivers. Has a curious fleshy proboscis on the lower jaw. —*Gnathonemus longibirbis.*

(9) OKORO. No scales. Spotted. Upright fin on back. About 9-12 inches. Found in Lake and rivers. Edible.

(10) MUMI. The barbel of South Africa. Called in Swahili Kambare. Has a very flat head and grows very large. Eaten only by Africans. Eats other fish. Of no commercial importance. A mud fish. Will take bait.
—*Clarias mosambiacus.*

(11) NINGU. Has scales and is very bony. Only eaten by natives Caught in the Lake. The mouth is underneath.

(12) SIRE. Found in Lake and rivers. Edible. Has two deep depressions on each side and a hump on top. Has a shovel mouth. Something like a herring. Probably *Schilbe mystus*. Known also as the Butter fish. Breeds in the papyrus. Seldom caught in nets. Generally in fish traps. Said to be quite the best eating fish of Kavirondo waters, but not caught in commercial quantities and probably would not travel well. In season takes bait. When cured and smoked not unlike dried red herring. —*Schilbe.*

(13) OSONDOGORO. A scaly fish like a John Dory. Found in the Lake. Edible. —*Haplochromis sp.?*

(14) OSOGA. A small silvery fish. Caught along the Lake shore with rod and line. Edible. —*Alestes nurse*

(15) NYERA. Said to be the young of the Mumi. Very like the Nyawino but lighter.

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(16) NYAWINO. Like the Nthira but does not grow big and is of a darker colour. Inhabits the Lake and rivers. Edible.

(17) NDERA. Small fieh found in the rivers.

(18) OMENA. A very small silvery fish caught in traps in the Lake. —*Engrauli cypris.*

(19) OYORA. Said to be the young of the Ngege.

(20) OBUDI. Said to be the young of the Mbiru.

(21) ADEL. A small scaled fish of silvery colour about four inches long.

There are other fish which I have not been able to see and cannot describe, but they are said to live in the Lake and rivers and to be edible. The names given are: Otenda, Adendi, Otengo, Nyangoro, Obu.

I have also seen small eels (Okunga), about a foot long, caught in the Lake. Crabs (Okela) and Oysters, and fresh water tortoise (Opuk) are also found.

For a good deal of the material embodied in this article I am indebted to reports made some years ago by Dr. Orloff and Mr. Blaney Percival and also for figures and information supplied by the Administrative Officers in Central and South Kavirondo and the Superintendent of Inland Revenue and Conservancy. The native names given are Dholuo (*i.e.*, the language spoken by the Jaluo Kavirondo except where otherwise stated. [129]

241 Besides weeding, there is much to be done to protect the crop,
[789] Hail storms do a lot of damage at times, and to protect the crops a " medicine " is employed called ' migalo magalo pe." This consists of herbs tied in a bunch to the top of a pole about 6—8 feet high, which is stuck in the middle of the field. (Herdsmen too, use this
[231] to keep themselves dry while out with the cattle, and I have seen a herdsman accompanying the cows with these herbs tied to the top
[674] of his spear.) Except in time of famine, stealing from the crop is unknown, which contrasts favourably with complaints made from time to time that Natives steal maize and coffee from European farms. In their own community such an offence is practically unknown. But
241 four-legged depredators are a serious problem in certain localities.
417 Fields are enclosed in fences of the branches of thorn trees, laid on the ground, and these do give a certain protection against wild pigs,
● 136 monkeys and baboons. But they are of no use against hippo and elephant. To protect crops, mainly sweet potato, against the hippo it is the practice to erect a small temporary hut, which is occupied at night by a guard armed with a couple of spears. It must be a weary business, for the potatoes are cultivated close to the lake edge where mosquitoes swarm, so between the hippo and the mosquitoes the guard
[224] must have a trying time. In old days before the Game laws came in, organized hunts were held, which were very successful.

241 The most difficult animal is, of course, the elephant. These have
136 disappeared from Central Kavirondo but still infest districts like Mirunda and Sakwa in South Kavirondo. They can do heavy damage both to millet and sweet potato. The beating of pots and pans is tried to scare away the elephant, while occasionally the more daring venture forth from the hut to throw stones or otherwise drive away the beasts. This is an operation attended with peril in the dark of the night, and occasionally lives are lost in this way. Lives too are lost through guards mistaking their fellow guards for wild animals. Jok, one of the most famous of ancestors of the Luo, is said to have lost his life in this way. The story is that before going off to drink beer, he told his sons to go on guard in the field that night. They refused to his face, but when he had gone thought better of it, and went on guard. He returned from the beer drink, and went to see what was happening in the field, believing that there was no guard. His sons mistook his footsteps for that of a pig, and speared him with fatal results. Similar things still occur from time to time.

241 Birds, especially weaver birds, are a pest as the grain crop
136 ripens. Scarecrows are employed, both mechanical and human. Of the former an inverted cooking pot on the top of a short pole is a
857 common device. Boys are employed in large numbers when the birds are most troublesome, and their harsh cries are quite a part of the

241 life of the countryside. Ofttimes the boys are armed with slings from
136 which stones are projected at random into the midst of the crop, or
857 into the midst of a flock of birds as they rise. One of the reasons why the Luo denude the land of trees is because they give harbourage to their bird enemies.

241 They are wise to insect pests also, and have a greater belief in
136 their remedies than many a farmer has in the aids supplied by our
789 civilization. The medicine is called by two names, " yadh miri " or " yadh lisese." It is employed against a small red and black beetle, called by the Luo " Nyanginja " which eats the flower of the millet, thus preventing a crop. The medicine man who prepares it must be a man of peaceable disposition and character, not a quarreller or disputer with his neighbours. The whole success of the medicine depends on the absence of disputation and quarrelling, and of the grosser forms of vice, like adultery. No adulterer may be supplied [837] with the medicine, for his very handling of it would nullify its usefulness, not only for himself, but also for his neighbours. All must be peace in the community until the harvest is reaped. Unlike other medicines, which are tied to a pole and left to work their influence, " yadh miri " is made into a decoction, which is sprinkled over the growing crop at eventide. I have seen the operation at a place called Maranda in Sakwa, Central Kavirondo. It was then being used against maize borer. At a time when this pest was giving a good deal of trouble to European farmers, I heard a man who was back in the Reserve on leave from a farm in the Kitale district, pour scorn on the methods used by Europeans with various sprays. He was by way of being one of the more progressive men, but he had nothing but absolute faith in the efficacy of " yadh miri."

578 Crops damaged by domestic stock gave rise to many an angry
685 passion. The owner of the crop had liberty to chastise personally the herdboy (or man) through whose carelessness the stock were left untended. If the herd were a lad he could be cuffed and thumped without being able to proceed against the assailant. Nor did the father protest, provided the chastisement were in reason, for he knew that his son had rendered him liable to a claim for compensation. As likely as not he would add his own quota to the punishment already meted out. If the owner feared that he would get the worst of it in a personal encounter with a herdsman, then he had his remedy at law.

241 When the crop is ready for harvesting it is the duty of the men to do the reaping. In the case of millet, this is a laborious business, calling for judgment, for not all the heads would be ripe, and some must be left to ripen after the bulk has been reaped. It is the task [462 of the women and children to pack the crop into the grain baskets 857] and carry it to the grain stores. In the case of millet it is quite